Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

Claim 1. (currently amended) Controller circuitry that detects polarity reversals in a read/write head of a disk drive system, the controller circuitry comprising:

decoding circuitry for decoding a direction signal to provide a decoded signal, wherein the direction signal is generated by the read/write head in response to reading a directional pattern stored on a data track of a magnetic disk between a data sector and a servo sector; and

comparing circuitry for determining if the decoded signal matches a first pattern that indicates whether the read/write head have reversed polarity.

Claim 2. (original) The controller circuitry of claim 1 wherein the comparing circuitry includes a plurality of AND gates that compare the first pattern to the decoded signal.

Claim 3. (currently amended) The controller circuitry of claim 2 wherein:

a tolerance between the first pattern and ~~the~~ a second pattern is 8 bits.

Claim 4. (original) The controller circuitry of claim 1 wherein the decoding circuitry includes an amplifier that amplifies differential read signals from the read/write head to generate an amplified read signal, a buffer that converts the amplified read signal into differential digital signals, and an exclusive OR gate that is coupled to receive the differential digital signals.

Claim 5. (original) The controller circuitry of claim 4 wherein the exclusive OR gate performs an exclusive OR function on a first one of the differential digital signals generated in a current clock cycle and a second one of the differential digital signals generated in a previous clock cycle.

Claim 6. (original) The controller circuitry of claim 1 wherein the direction patterns are written in regions of the data track that precede each servo sample.

Claim 7. (original) The controller circuitry of claim 1 wherein the first pattern is 11011.

Claim 8. (currently amended) A disk drive system for reading magnetic recording media, the disk drive system comprising:

a read/write head that includes a read sensor for reading data written onto data tracks on the magnetic recording media and generating a read signal, wherein the read sensor reads direction patterns stored in regions of the data tracks located between a data sector and a servo sector; and

decoder circuitry for decoding the read signal to generate a decoded read signal and comparing the decoded read signal to a pattern to determine if the read/write head has reversed polarity,

wherein the disk drive system reverses a polarity of the read signal if a portion of the decoded read signal matches the pattern, and the portion of the decoded read signal is generated in response to reading one of the direction patterns.

Claim 9. (original) The disk drive system as defined in claim 8 wherein the decoder circuitry includes a plurality of AND gates that compare the decoded read signal to the pattern to determine whether the read/write head has reversed polarity.

Claim 10. (original) The disk drive system as defined in claim 9 wherein the decoder circuitry includes a shift register coupled to inputs of the AND gates.

Claim 11. (original) The disk drive system as defined in claim 8 wherein the decoding circuitry includes:

an amplifier for amplifying the read signal to generate an amplified signal;

a buffer for generating differential digital bits in response to the amplified signal;

two sets of shift registers for storing the differential digital bits; and